

MANGO PROPAGATION PRACTICES IN A COMMERCIAL NURSERY

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Most of the mangos recommended in Hawaii originated as chance seedlings from monoembryonic varieties, which show wide variation in their offspring. I have heard that 'Rapoza' and 'Exel' were selected from a group of about 100 'Irwin' seedlings. That is about a 2 percent success rate for getting selections from seedling populations. We have customers who have planted seedlings that never produced for them. We also have customers who planted seedlings and ended up with a good tree. We sell only grafted mangos.

When growing seedling rootstocks, we plant the seeds flat in their husks in well-drained media. We find it too time-consuming to remove the seed from the husk. We prefer seeds of monoembryonic varieties to polyembryonic seeds, because monoembryonic seedlings can be grafted much sooner, about nine months after planting.

We select terminals with plump buds that are ready to burst with a new flush. If the buds have started to grow, beyond just being swollen and ready to grow, then it is too late. Sometimes terminals can be prepared for use as scion wood by removing the leaves at the base of the terminal 10–14 days before removing the terminal. By the time the petiole stumps of the trimmed leaves fall off, the buds are likely to have begun to swell. Girdling may also help to prepare scions. We store scion wood in plastic bags and protect them from heat. If they are to be stored for a while, some moist sphagnum moss can be put in the bag.

Most commonly we use cleft grafts in our nursery. For that graft you need scion wood and stock plants that are about the same diameter. After the union is taped firmly, we use some thinner plastic to wrap the whole union and scion. Usually it takes about three weeks for the buds to begin growing through the plastic.

We also use splice grafts and side veneer grafts. We always leave some leaves on the stock plant. Grafted materials go into a hot-house, which we find promotes their growth. We leave the grafting tape on until after the scion has hardened its new leaves. When we take the tape off, we also remove any side branches from the stock.

In topworking mangos we often use inarching, as well as bark grafting. Occasionally a home-

owner will want a single tree topworked with more than one cultivar, and we have put up to six cultivars on one tree.

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Q: What potting media do you use?

A: It is basically peat moss, perlite, and cinders, but we add some manure and soil. There is one part peat to about six part perlite plus cinders.

Q: Sometimes I'm very careful and everything seems right and I get poor take; other times I'm kind of sloppy and I get 100 percent take. Do you think the phase of the moon can influence that?

A: We get the best results in the springtime, when the trees have had a period of dormancy. It is harder to get good scion wood in the fall; often the wood is too soft. Sometimes you can get better scions at that time of year if you girdle the branches to prevent flushing. I don't think the moon has anything to do with it.

Q: Do you have any new cultivars?

A: Some homeowners come to us with what they think are good mangos and ask us to graft them. We have sold some of one called 'Fukuda', which has exceptionally firm fruit with good storing qualities. I have kept them for up to six weeks in the refrigerator. The fruit is round and bright yellow, without much red coloring. We have a Thai cultivar, 'Brahm Kai Mea', a long, green mango with poor appearance but very good eating qualities, and it can be eaten half-ripe as well as ripe. It is sweet and fiberless. The tree seems to bear at different times of the year. We are trying a number of other cultivars at our farm in Waimanalo, where the weather tends to be wet, and we concentrate on Asian varieties because they come from wet areas, but we are finding that it is not necessarily true that mangos from such areas have anthracnose resistance. We have gotten consistent fruiting for several years from 'Rapoza' in Waimanalo, with good anthracnose resistance.

Q: Have you transplanted volunteer seedlings from old groves to pots to use as rootstock?

A: I haven't, but I think you can. One drawback we find in starting from seeds without removing them from the husk is that we used to have poor germination rates because of seed weevil. Now, we open up about ten seeds, and if they have low weevil infestation, maybe one in ten, we use them. Sometimes they can be 50 percent or more infested, and we don't bother planting those.

Q: Are there any rootstocks that tend to dwarf the trees, or keep them from getting very large?

A: In Thailand they have some polyembryonic types that do not get big, and we have some hope that they might produce a smaller tree when used as rootstock. We cannot bring in mango seeds because of quarantine, but we can bring in scion wood to grow to get seeds.

Dr. Hamilton: Henry Nakasone and others have done experiments on this, and the dwarfing effect of rootstocks has been zero. It depends on

the vigor of the scion tree and has nothing to do with the rootstock. People have used small-tree rootstocks like 'Julie', and weak rootstocks from airlayers, and compared them with large-tree stocks like 'Haden', and all the trees grew the same size.

A: There might be some other desirable qualities with these polyembryonic mangos that the Thais prefer as rootstocks. We have made one observation comparing a grafted tree brought in from Thailand and scion wood from that tree grafted onto a second rootstock in our nursery. I noticed that the node length on the original plant was much shorter than that on the local rootstock, and I will be interested to see if this persists.

Dr. Hamilton: There is a disease, and we have it here in Hawaii, that was found to cause poor tree growth in a rootstock trial in Puerto Rico, but that wasn't a case of dwarfing rootstock, it was diseased rootstock.